DOCUMENT RESUME

ED 269 133 PS 015 752

AUTHOR John, Martha Tyler
TITLE Can Preschool Be Detrimental to Cognitive Growth?
PUB DATE Apr 86
NOTE 41p.; Paper presented at the Annual Conference of the Midwest Association for the Education of Young Children (Peoria, IL, April 17-20, 1986).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Cognitive Development; *Cognitive Processes; *Early Childhood Education; *Early Experience; Educational Background; Foreign Countries; *Logical Thinking; Piagetian Theory; Preschool Children; Primary Education; *Young Children
IDENTIFIERS *Piagetian Tasks; *Swaziland

ABSTRACT

Conducted in Swaziland in 1984 and 1985, this research study explored children's logical thinking skills. One of the primary elements examined was the relationship between previous preschool experience and the child's ability to perform logical thinking tasks. The study consisted of six Piagetian tasks given to 400 children, preschool through grade 3, who represented a sample from the variables of sex, age, grade level, SES background, urban and rural settings, and previous preschool and non-preschool attendance. The most striking result indicated that non-preschool attenders performed better on five of the six tasks; namely, length, weight, number, seriation, and grouping. The preschool attenders performed slightly better only on the classification task. Rationale provided for this finding included the lack of development of good quality preschool programs in the country. Recommendations indicate the need for curriculum development in early childhood education and for upgrading preschool teacher training programs in the country. (DST)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED269133

PS 015752

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

CAN PRESCHOOL BE DETRIMENTAL TO COGNITIVE GROWTH?

by

Martha Tyler John

A research study was conducted in the Kingdom of Swaziland in late 1984 and 1985 that examined children's logical thinking skills. One of the primary elements examined in the study was the relationship between preschool experience and the child's ability to perform logical thinking tasks. At the time the study was carried out there were already 150 preschools in the Kingdom, some of which were little more than multiple baby-sitting arrangements. In many rural areas especially, a local woman simply looked after the children to the best of her ability. The research data that were gained from the study were much needed in the country because the growth of preschools was rapid, and the information would be used to give at least beginning direction in the development of curriculum that was much needed. Preschool teacher training programs could also use the information to upgrade the preparation of teachers at the National Teacher Training Colleges.

HISTORICAL BACKGROUND

The culture in which the child is raised may affect his behavior in a number of ways. Because this is true, some background information dealing with the Swazi culture is provided here. A more extensive coverage of the education provided by the Swazi society will be given in Appendix A.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Martha T. John
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

The Swazi people had a systematic form of education for the school-age population before the arrival of Western education. The type of education offered was a combination of formal and informal education. There were certain objectives even though these were not written down in the currently approved form.

There were general goals for all the people. The most important national goal for education was to produce good citizens. This was envisioned to be persons with respect for authority, respect for other people and self-respect. Children were taught to honor and revere their parents and abhor bringing shame to the family name by unacceptable conduct. They were taught to behave with courtesy, to listen without interrupting and to obey those older than themselves (Kuper, 1978). Another important national goal for education was to impart survival skills to the learner. Boys were taught hunting skills, animal rearing, and herding. Girls worked mostly around the home and in the fields where work, such as weeding and reaping, was done by the girls as well as the women who supervised and worked with them. Men and boys saw to the tilling of the soil and planting the seeds.

To achieve their educational goals, the Swazis had a systematic structure for dividing the nation into emabutfo or regiments. Each person belonged to a specified regiment where membership was determined by one's age. Each regiment had a name, and each boy or girl was responsible to the leader of the regiment and to the other members. Young people were always warned not to disgrace their regiment by engaging in unacceptable social behavior.

In the home the responsibility for teaching the children rested heavily upon the grandmother (gogo). A typical Swazi household was comprised of several family units living in separate huts. One of the huts was called a kagogo (grandmother's residence). This was a hut of great significance to the whole family and a classroom for children. The children spent their evenings around the fire at, or in, the grandmother's residence. They remained there for the rest of the night. During the day there were other forms of education to enculturate the children. The reason for assigning the education of the children to the gogo was that she was one of the most resourceful persons in the family for the portraying of the Swazi culture. Her credibility was based on her age and the experiences she had had over a long lifetime. She was well versed in the sacred traditions and acceptable norms in the culture, and had time and patience to deal with the children since she was free of household chores. The young mothers attended to the chores and served the grannie with meals and other daily needs.

CURRENT NATIONAL NEEDS

In recent years Swaziland has been undergoing changes similar to those taking place in many countries. The movement of the population to urban areas and an increased use of technology has been occurring. There is now a marked difference in the upbringing of children. Their education is no longer the total responsibility of the family. Children spend long hours at school. The type of education they receive is based on knowledge that the grandmothers can no longer claim to have. Even what the gogos do know is not regarded as highly as it used to be in the past. Much of today's education is based on

the child's ability to perform well in an urban environment.

The current teacher training programs and the development of curricular materials needed to be based on reliable information about the cognitive abilities of the children of Swaziland. Research was needed to establish a baseline of solid facts on which to build educational programs for teachers of young children. The research reported here provides essential information about the relationship of the age/stage theory, preschool, sex differences, and socio-economic status to children's ability to complete logical thinking tasks.

THEORETICAL BACKGROUND

Four areas of related research provided the essential background for this study. The theoretical background deals with the age/stage theory of cognitive development, the data available on preschool effects and the related research on sex differences, and general information on socio-economic influences.

Cognitive Theory

Cognitive theory deals with thought processes and the intellect. It is concerned with internal mental operations such as concept formation as opposed to external influences such as environment. Piaget spent his lifetime exploring the boundaries and the depth of children's cognition. A number of Piaget replication studies have been done in Africa to determine the universality of the theory and to discover the effects of environment on children's ability to perform specified logical thinking tasks. Dasen(1977), Heron (1971),

Wober (1975), Warren (1977), and Werner (1979) have raised questions about the effects that Euro-Western contact may have on the child's ability and/or motivation to perform logical thinking tasks.

The studies cited in these references generally support Piaget's basic conclusions concerning the progression of thought from pre-operational to concrete operational thinking. However, researchers have found that children vary considerably as to age-level in their ability to perform Piaget logical thinking tasks (Greenfield, 1966; Almy, 1970; Halligan, 1976; John et al, 1983). Werner (1979) summarizes the ideas that much of the research points out when he says, "....whether, and at what age they (subjects) become functional seems to be determined to a large extent by cultural patterns that include significant effects of acculturation, education and urbanization" (p.220). Kingsley (1982) elaborates on the notion of cultural effects when he states, "....there is the possibility that cultural conventions governing talk between a child and an adult may in some societies inhibit a child from speaking freely or extensively in the presence of adults, or from elaborating on an answer they have given or responding to questions such as, 'Why?' or, 'How do you know?' "(p. 2). Bam (1982) found that "On the whole, during the interviews the urban subjects showed more self-assurance and a more relaxed manner than their rural counterparts. There was also a marked difference in the general attitude of both groups towards the investigators. The urban subjects appeared more curious about what was going on and were generally more responsive" (p. 89). John, et al (BOLESWA, 1983) in comparing rural, urban and traditional village children (characterized by a mixture of modern ways of living and strong traditional ties) found that, "Village students generally

performed at a level between urban and rural students..." (p. 14). Thus, it would seem that experience in the formal school setting does relate to success on logical thinking tasks, especially those experiences that are common to the Euro-Western setting. Dasen (1977) states the case strongly when he says that "... the variable of "European contact" may form a continuum which is directly related to the "rate" of development of concrete operations (or at least the perforance of concrete operational tasks)" (p. 183). From the accumulation of research evidence reported here, the variation in performance of the children in Swaziland can be seen as similar to the results obtained in other African countries. The traditional reserve between youngsters and oldsters persists, and the amount of contact with the Euro-Western world differs between rural and urban populations.

Preschool Research

The preschool child is growing rapidly and is just beginning to adjust to the larger world. The home has been the center of his universe, and now the boundaries of that world are expanding to include a number of other important people. Physically, intellectually, and socially the child is changing, but there are some general traits that preschool children have in common in each of these areas of growth.

Physical Sketch

Preschool children are developing rapidly physically, and the coordination of large and small muscles is an obvious challenge. The

young child is learning to climb, to balance in precarious places, to push and pull, and to catch and throw. Because this is true, the preschool or creche should provide both the time and the materials to aid in this large muscle development. The exercise of these muscles is important, but it requires large amounts of energy. Therefore, the very young child needs a nutritious diet and plenty of rest if he is to develop his physical being to the best advantage.

Intellectual Sketch

The preschool child is at Piaget's Preoperational Stage in which the child begins to use symbols to represent things, but still does not think symbolically overall. He tends to note a single attribute of his physical world and ignore apparent contradictions. He might say that a red rod and a piece of red cloth were alike because they are red. When asked how they are different he would say that they are the same color, ignoring the shape, size and textural differences.

The preschool years are important to the intellectual development of the child because it is at this young age, that the child is exposed to adult and peer models who help set the tone for the child's academic growth for years to come. "Preschool, then, enables children to better carry out their first scholastic tasks" (perry Study, 1984, p.4).

The preschooler has a natural interest in language and in word meanings, and is most receptive, therefore, to songs, stories, poetry, nursery rhymes and the like. (Note that this type of training was provided in traditional Swazi society.) Listening to many variations

of language usage provides the child with verbal models from which to select his own vocabulary for the expression of ideas.

Socio/Emotional Sketch

The preschool child learns to live in an expanded group. This is not a simple task at any time in life, but it is particularly difficult when one does not have an extensive vocabulary developed to express himself, and the physical body cannot effectively carry out all the mental commands. Young children need adult help to develop social skills as they play and share with others in their learning activities.

Perry Preschool Study

Recently a long-term study of preschool effects was completed in the United States. While the results of this study cannot be directly applied to the preschools of Swaziland, some of the comments seem to be relevant. It was found that "Preschool education contributed to increased scholastic achievement during the years of elementary and middle school as measured by standardized achievement tests" (Perry Study, 1984, p. 24). "In the Perry Preschool Study, persons who had attended preschool had better grades, fewer failing marks, and fewer absences in elementary school; they required fewer special education services, were more likely to graduate from high school, and were more likely to continue their education or get vocational training after school than their no-preschool counterparts" (1984, p. 40). These statements raise high hopes for preschool attenders. However, the researchers did build in a word of caution. They say that, "The best

documented immediate effect of preschool is an improvement in the child's intellectual performance, an effect that usually lasts no more than a few years" (Perry Study, 1984, p. 4).

The Swaziland research reported here has examined the effects of preschool attendance on logical thought processes in Grades 1 and 2 and in Standard 1 (which is the equivalent of Grade 3).

Preschool in Swaziland

In Swaziland today, preschool refers to children from 4-5 years of age. According to educational policy, children are eligible for entry into the first year of school at the age of six. Preschool education is based on the following goals:

1. To give children social skills to enable them to relate well to other people.

2. To expose children to activities geared towards the acquisition of certain concepts to help them cope with environmental survival skills.

The Minister of Education stated in a speech that early education begins in the womb. He went on to say that the best environment for early learning is the child's home and surroundings. He stressed that the early lessons the child receives should be in line with the values of the family and culture. (Policy speech July 31, 1980).

In 1983 the Minister of Education made the following statement in

a policy speech: "Preschool education needs to be defined....What has happened so far is that Government has been encouraging private agencies to organize playgroups and nursery schools. It is clear that policy regarding preschool needs to spelt out. A curriculum for this group will soon be spelt out to include the ages of children who are to attend such preschools" (p. 2). In 1984 the Senior Inspector of Preschools was asked how much progress had been made in terms of the preschool curriculum and she reported that they have curricula for the preschool teacher education and for preschool children. Currently evaluation of the teacher education curriculum is being carried out.

Research on Male/Female Responses

Sex differences in cross-cultural studies in performance on Piagetian tasks have been investigated by several researchers. Heron and Simonsson (1969) and Bliss and Docherty (1979) found no significant differences between boys and girls in their ability to complete the logical thinking tasks. However, Otaala (1973) stated that among his subjects the boys were "decidedly better than girls" (p.71). He attributed this superiority to differences in upbringing, particularly the expected degree of compliance - the idea being that females have strong compliance codes applied whereas males are expected to demonstrate more independence, up to a point. Other studies have examined this variable, but the results continue to be mixed. The differences in performance between males and females was examined in the research in Swaziland to determine the relationship of success on tasks more directly for this population.

The socio-economic status of parents has been examined by a limited number of researchers. Lwanga-Lukkwago, (1982) found that the socio-economic status of the parents correlated with different degrees of success on territorial decentration tasks for children in Kenya. "Boys and subjects from lower socio-economic categories are respectively more territorially decentered than girls and subjects from higher socio-economic categories" (abstract, vi). He found that the remote rural subjects were the most territorially decentered, while the least decentered were the subjects from the urban Nairobi region. It would appear that youngsters in a rural setting and those from a lower income bracket family explore their environment and become acquainted with its varied components much more than the confined child. This raises the question of over-protection and the difficulty of confinement as it relates to cognitive development. The Perry Study (1984) found that "Preschool helped study participants overcome some of the disadvantages of coming from lower-income families and of being more educationally vulnerable..." (p. 30). The possibility that the lower-income family in the United States and the lower-income family in Kenya are operating in vastly different circumstances suggests itself. The present study has determined the socio-economic level of the subjects' parents in an attempt to add to th body of information in this area of important influence in the child's development.

Urban/Rural

A number of studies have investigated the variable of urbanization where Euro-Western contact occurs more often, but there have been

mixed results on the overall effects of urbanization, depending somewhat upon the type of task that was being examined. Dwoc (1973), Fahrmeier (1978), Halligan (1976), Okonji (1971) and others have examined the urban/rural variable. John (1983) in a study in Botswana found that "In general, urban school children successfully completed many of the tasks earlier than school children in village or rural areas. Rural students performed well on seriation tasks and conservation of number, but were not up to the urban level" (p. 16).

METHOD

Population

The study was carried out in the Kingdom of Swaziland in Southern Africa. The Swazi people are a homogeneous group with a common language, although about 2.5% of the current population is said to be of non-Swazi origin. The sample for the study consisted of 402 subjects. The schools included in the sample and the distribution of the sample among districts is shown in Table 1. The distribution of the actual sample of subjects by district, sex, preschool/non-preschool, milieu, grade, socio-economic background and age are given in Table 2.

Procedure

College and University students were used as aides in the data gathering process. Instructions were given to them in the form of actual demonstrations of the use of questions and recording procedures. Scripts in both English and siSwati were provided along

SCHOOLS INCLUDED IN THE SAMPLE

DISTRICT	MILIEU	SCHOOL	LEVELS	STUDENTS PER LEVEL
HHOHHO	Urban	Entabeni	Preschool	18
		National Baptist	Preschool	15
		Piggs Peak Nazarene	1/2/3	11/12/12
	Rural	Esiyalwini	Preschool	18
		Forbes Reef Primary	1/2/3	13/13/13
LUBOMBO	Urban	Siteki	Preschool	13
		Siteki Nazarene	1/2/3	13/13/14
	Rural	Phonjwana	1/2/3	12/12/12
MANZINI	Urban	St. Michael's	Preschool	13
		St. Michael's	1/2/3	13/13/15
	Rural	Mbekelwini	Preschool	12
		Mbekelwini	1/2/3	12/12/12
SHISELWENI	Urban	Nhlangano	Preschool	11
		Evelyn Baring	1/2/3	12/12/12
	Rural	Madvulwini	1/2/3	13/13/13

TABLE 1

SUMMARY OF POPULATION SAMPLE

DISTRICTS	Students
HHOHHO	125
LUBOMBO	89
MANZINI	102
SHISELWENI	86
TOTAL	402

MILIEU	Students
URBAN	222
RURAL	180
TOTAL	402

SEX	Students
MALE	184
FEMALE	220
TOTAL	402

LEVEL	Students
PRESCHOOL	100
GRADE 1	99
GRADE 2	100
GRADE 3(STD.1)	103
TOTAL	402

PRE/NON PRESCHOOL	Students
PRESCHOOL ATTENDERS	172
NONPRESCHOOL ATTENDERS	129
UNKNOWN	101
TOTAL	402

SOCIO-ECONOMIC	Students
HIGH INCOME	43
LOW INCOME	50
MIDDLE INCOME	187
UNKNOWN	122
TOTAL	402

NUMBER OF STUDENTS BY AGE DISTRIBUTION

AGES										
4	5	6	7	8	9	10	11	12	13	TOTAL
26	67	73	57	72	55	30	17	4	1	402

TABLE 2

with standard data collection sheets.

Six Piaget tasks were selected and the concrete materials for use with the subjects were developed in "kit" form so that each of the data collectors could have his/her own set of materials. Piaget indicates that concrete objects that are familiar to the subjects are needed when exploring logical thinking tasks. The tasks and the materials selected were as follows:

Classification -- 4 doll dresses - 2 trousers
superordinate category - clothes

Seriation -- 8 rondavels (huts) of graduated sizes
8 sticks of graduated sizes

Conservation of Number -- 16 sweets (wrapped and alike)
for two groups of 8 each

Conservation of Length -- 2 strips of cardboard of
identical length marked
like roads; 2 matchbox cars

Conservation of Weight -- 2 balls of clay - kitchen scales

Multiple Grouping -- 9 shapes - 3 colors (red, blue, yellow)
3 sizes and 3 shapes (circle, triangle
and square)

Data collection sheets were prepared in multiple copies and the

subject's name, age, sex and grade level were recorded at the beginning of each interview session. The subject was asked whether he/she had attended creche (preschool). This was also recorded on the data collection sheet.

In order to obtain data on the socio-economic status of the child, a data sheet with a space on it for this information was taken to the Headmaster at each school. A simple rating of poor, middle or well-to-do was given to each child who had participated in the study. Subjects were selected from a given school using a table of random numbers.

The actual interviewing of the children took place at the school and was done in the child's mother tongue. Each subject was interviewed for approximately 20-30 minutes. The child was shown manipulanda and given the opportunity to arrange items as he/she wished. The questions about the arrangement were then asked.

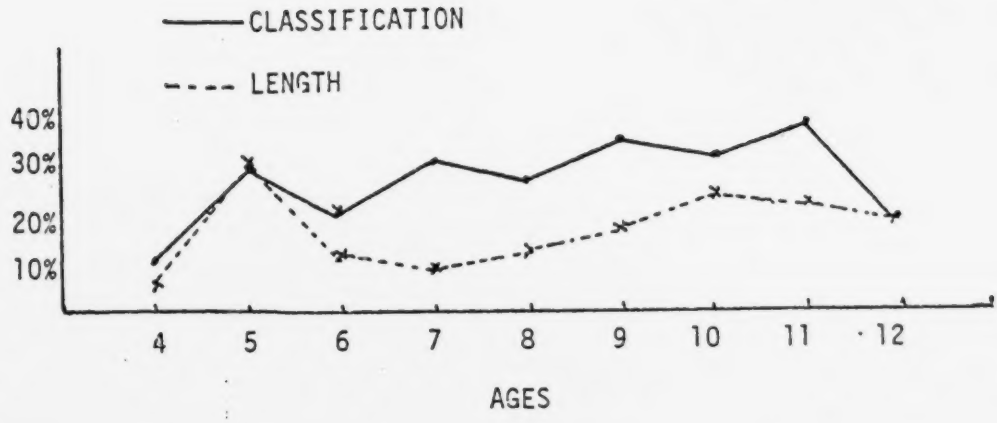
RESULTS

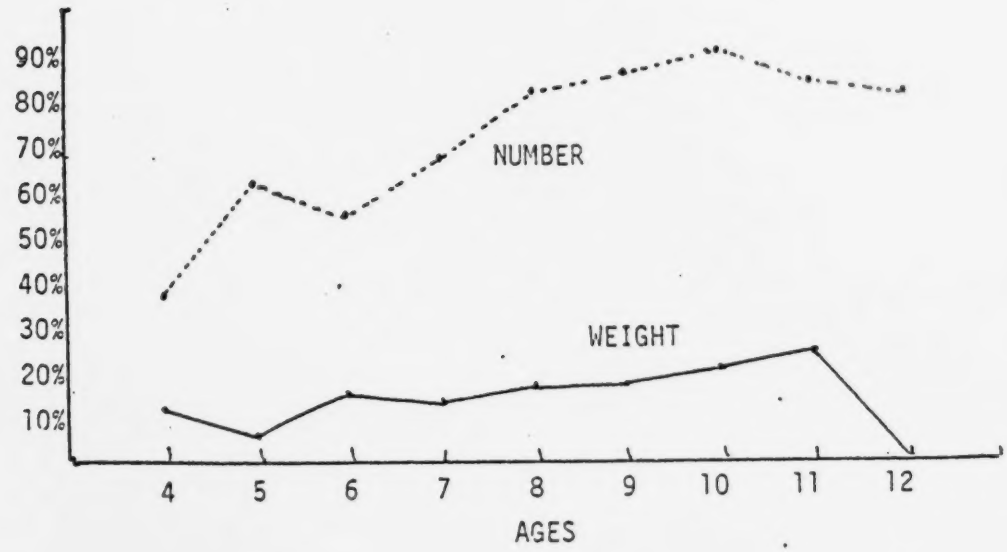
Personal data (age, sex, attendance or non-attendance at a preschool, and socio-economic information) and the subjects responses on the various Piagetian tasks were collected and entered in a computer data base. The information was then analyzed to determine the relationship of the variables to the children's success on logical thinking tasks.

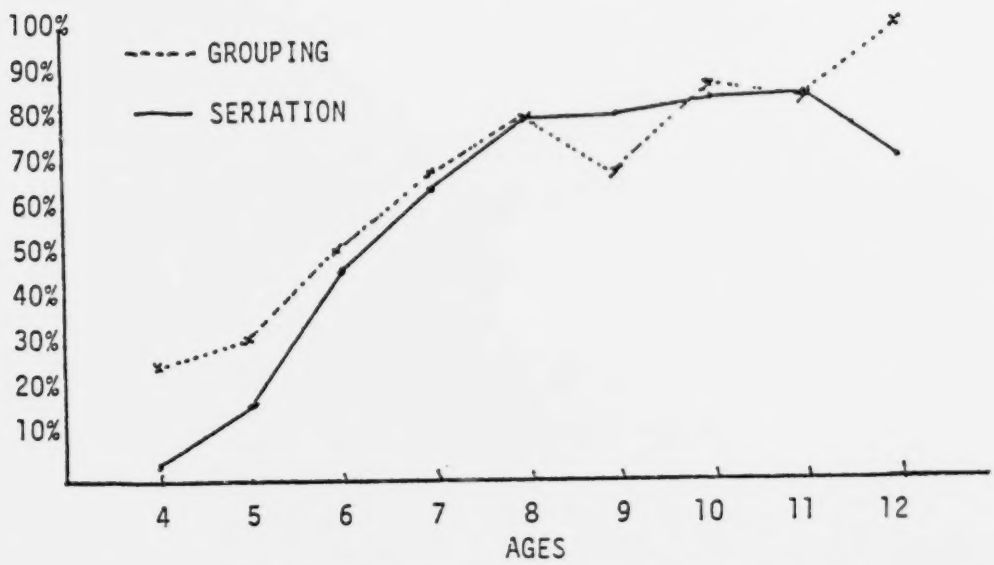
An important feature of Piaget's theory is the age dependence of performance on tasks. Table 3 shows the percentages of pupils

successfully completing the tasks plotted as functions of the age of the pupils. It should be noted that the sample of 12 and 13 year old pupils has been grouped together. Furthermore, pupils of this age are unusual in Grade 3 so they might be below average in their performance.

Age differences were taken into consideration in the analysis because of the different numbers of pupils in the various age groups, and the fact that the percentage of pupils successfully completing the tasks varied from one age group to another. It was necessary to make adjustments when comparing data from different age groups. Cochran's Y statistic was used to make this adjustment when results were compared over various age groups.







PERCENTAGES OF PUPILS SUCCESSFULLY COMPLETING TASKS SUMMARIZED BY AGES

TABLE 3

In some of the analyses, proportions of pupils successfully completing tasks were compared for fixed ages. For example, within a fixed age group, a comparison would be made between male pupils from different milieu (urban/rural) or different socio-economic backgrounds (high/low incomes). The normal approximation was used to compare the proportions.

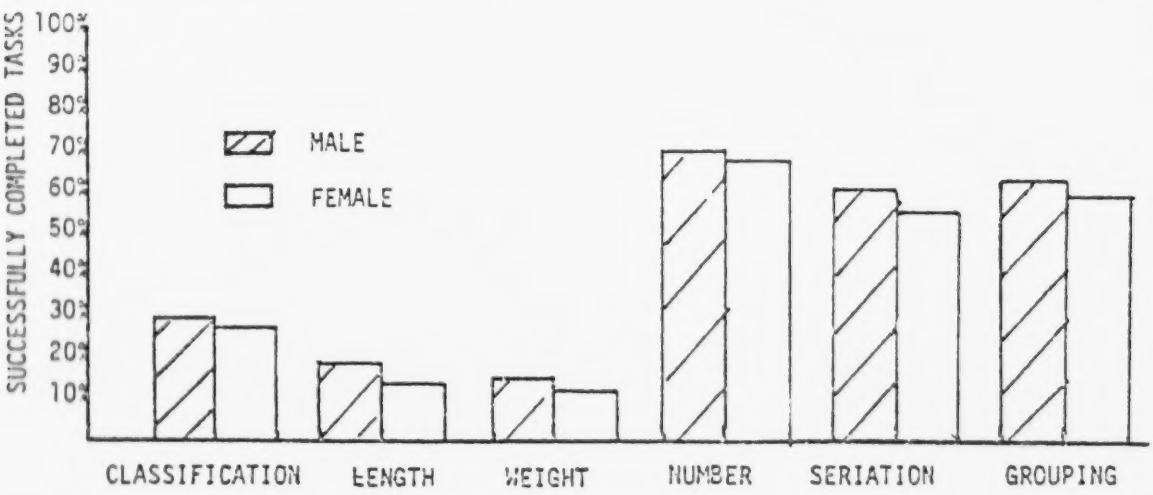
In all of the summaries, male and female results were separated and then comparisons were made to see if there were differences based on sex. When no significant differences were found between males and females, results were pooled to make other comparisons.

A comparison was made between male and female pupils for the six tasks. The analysis indicated the differences between sexes were not statistically significant; however, the proportion of successful males was consistently higher than the proportion for females. The pooled results (combining males and females) are shown in Figure 1. In addition to the numerical tables, visual summaries in the form of bar graphs are shown for each of the tasks.

COMPARISONS BETWEEN MALE AND FEMALE PUPILS

PERCENTAGE SUCCESSFULLY COMPLETING TASKS

	CLASSIFICATION	LENGTH	WEIGHT	NUMBER	SERIATION	GROUPING
MALE	30%	18%	15%	71%	60%	62%
FEMALE	28%	13%	12%	68%	56%	59%



COMPARISONS BETWEEN MALE AND FEMALE PUPILS

FIGURE 1

Information regarding attendance in preschool was not available for all the pupils. Over one hundred (101) of the pupils were not sure if they had attended preschool (creche) or not so they could not be included in the sample. Obviously the 100 pupils attending preschools could be included in the group of preschool attenders, but there was no comparable age group of non-preschool attenders so only the subjects in Grades 1,2 and 3 were considered for the preschool and non-preschool comparison. There were 201 pupils who were in this category and formed the basis of the comparison. Once again, no differences were found between males and females, so the results were pooled to give overall comparisons between pupils who had attended preschools and those who had not.

Figure 2 shows the comparison between those who attended preschool and those who did not. There were no differences between sexes, so the pooled results are shown. Surprisingly enough, the non-preschool attenders achieved a higher success percentage than those who attended preschool in all the tasks except Classification.

COMPARISONS BETWEEN PRESCHOOL AND NON-PRESCHOOL ATTENDERS

PERCENTAGE SUCCESSFULLY COMPLETING TASKS

	CLASSIFICATION	LENGTH	WEIGHT	NUMBER	SERIATION	GROUPING
PRESCHOOL ATTENDERS	34%	6%	9%	64%	55%	38%
NON-PRESCHOOL ATTENDERS	31%	14%	17%	77%	75%	78%

COMPARISONS BETWEEN PRESCHOOL AND NON-PRESCHOOL ATTENDERS

FIGURE 2

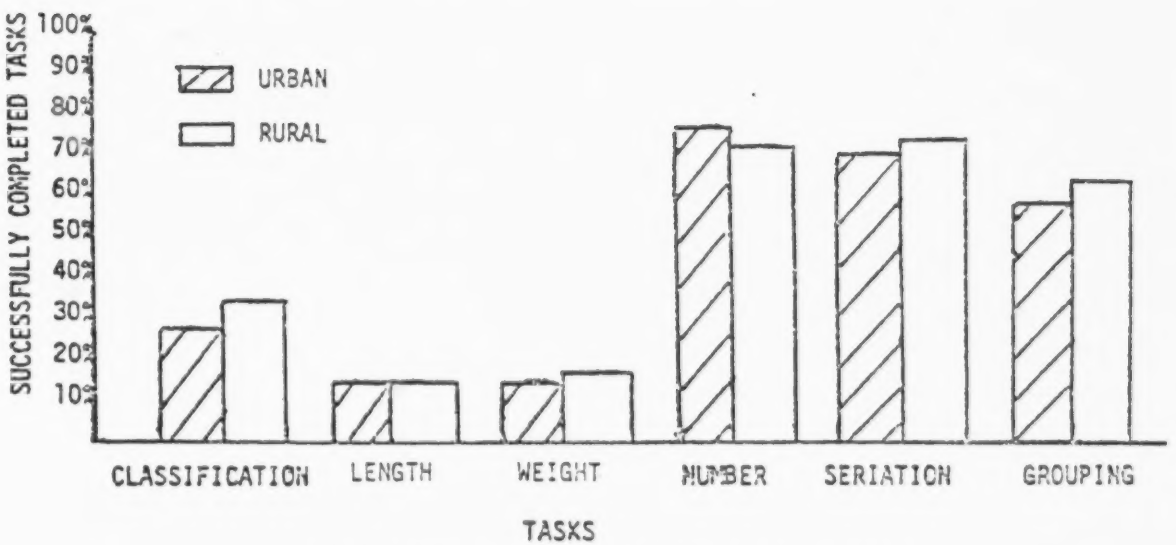
To determine possible effects of milieu (urban/rural areas), results for subjects in the different areas were compared. The differences between male and female subjects were not significant, so again, the pooled comparisons between urban and rural areas were made. The results are shown in Figure 3.

Another comparison was made between pupils from different socio-economic backgrounds. Information was not available for 122 of the pupils, so only 280 were included in the sample. It was decided that only the extremes would be compared, so 50 pupils from low income families were compared with 43 pupils from high income families. The results are shown in Figure 4. No differences were found between males and females, so the pooled results were used to compare the performance of subjects from low and high income families. Pupils from low income families had a higher success percentage on four of the six tasks. However, the differences between success percentages were not statistically significant for any of the tasks.

COMPARISONS BETWEEN URBAN AND RURAL SCHOOLS

PERCENTAGE SUCCESSFULLY COMPLETING TASKS

	CLASSIFICATION	LENGTH	WEIGHT	NUMBER	SERIATION	GROUPING
URBAN	27%	14%	14%	76%	70%	58%
RURAL	33%	14%	16%	71%	73%	63%



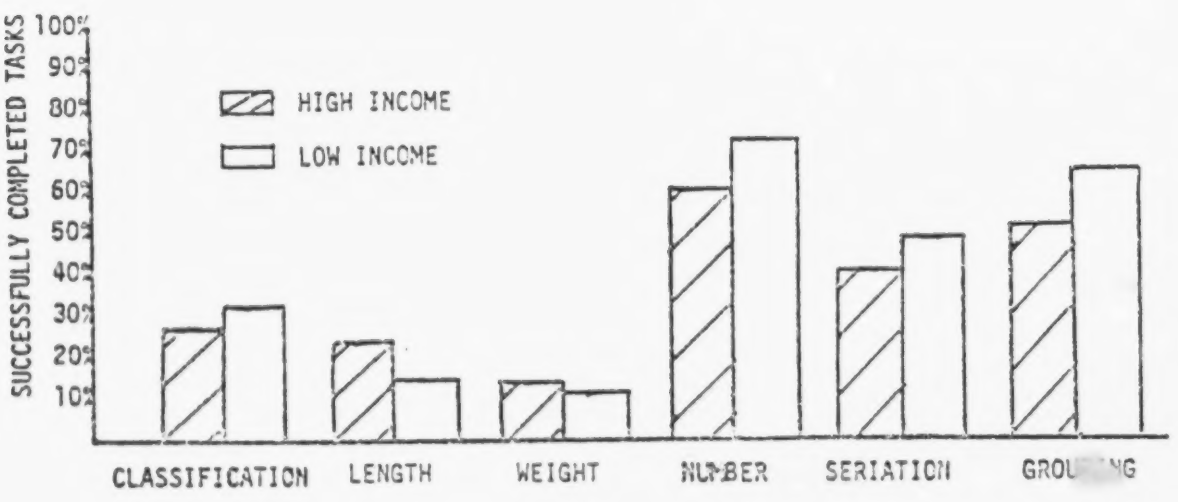
COMPARISONS BETWEEN URBAN AND RURAL SCHOOLS

FIGURE 3

COMPARISONS BETWEEN PUPILS FROM HIGH AND LOW INCOME FAMILIES

PERCENTAGE SUCCESSFULLY COMPLETING TASKS

	CLASSIFICATION	LENGTH	WEIGHT	NUMBER	SERIATION	GROUPING
HIGH INCOME	27%	23%	13%	60%	41%	51%
LOW INCOME	32%	14%	12%	72%	48%	64%



COMPARISONS BETWEEN PUPILS FROM

HIGH INCOME AND LOW INCOME FAMILIES

FIGURE 4

An investigation of the interaction between socio-economic factor and attendance in preschool was also made. Subjects from high income families were divided into two groups, those who had attended preschool and those who had not. The results are shown in Figure 5. Likewise, subjects from low income families were divided into those groups and the results are shown in Figure 6. Comparisons were made between preschool and non-preschool attenders within the two income groups and some of these variations were even more pronounced than when the groups were combined. The statistically significant differences are indicated in the figures.

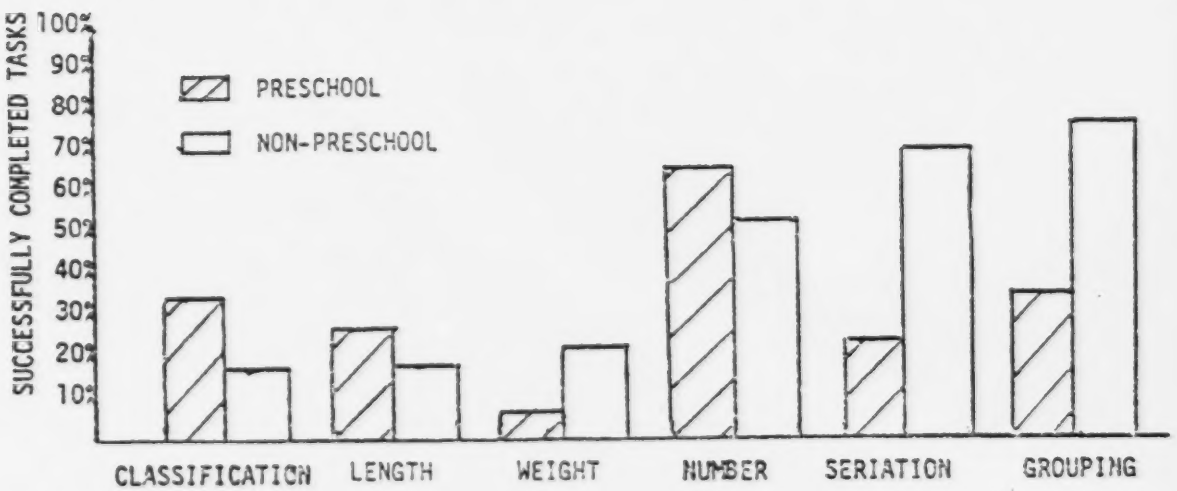
COMPARISONS BETWEEN PRESCHOOL AND NON-PRESCHOOL ATTENDERS

FROM HIGH INCOME FAMILIES

PERCENTAGE SUCCESSFULLY COMPLETING TASKS

	CLASSIFICATION	LENGTH	WEIGHT	NUMBER	SERIATION	GROUPING
PRESCHOOL	34%	26%	7%	65%	23%	34%
NON-PRESCHOOL	17%	17%	23%**	52%	70%**	76%*

* Differences are significant at the 10% level
** Differences are significant at the 5% level



COMPARISONS BETWEEN PRESCHOOL AND NON-PRESCHOOL ATTENDERS FROM HIGH INCOME FAMILIES

FIGURE 5

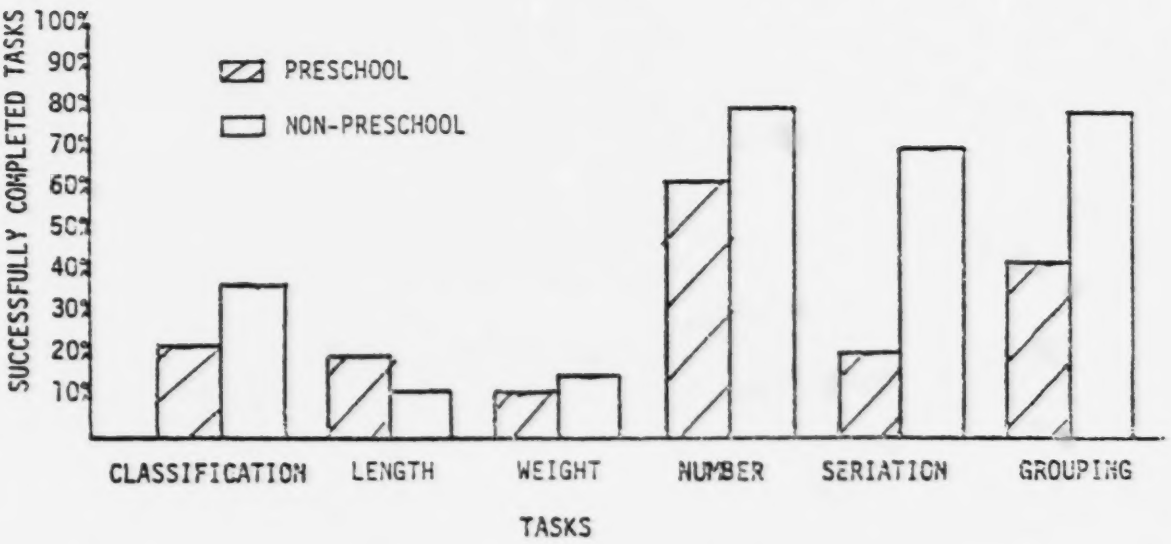
COMPARISONS BETWEEN PRESCHOOL AND NON-PRESCHOOL ATTENDERS

FROM LOW INCOME FAMILIES

PERCENTAGE SUCCESSFULLY COMPLETING TASKS

	CLASSIFICATION	LENGTH	WEIGHT	NUMBER	SERIATION	GROUPING
PRESCHOOL	23%	19%	9%	61%	19%	43%
NON-PRESCHOOL	37%	10%	13%	79%*	68%**	79%**

*Differences are significant at the 10% level
**Differences are significant at the 5% level



COMPARISONS BETWEEN PRESCHOOL AND NON-PRESCHOOL

FIGURE 6

CONCLUSIONS AND RECOMMENDATIONS

We have examined the influence of several variables on pupil's ability to successfully complete six (6) logical thinking tasks. The variables were sex, preschool and non-preschool attendance, urban and rural differences, and socio/economic level of the family. In connection with each of these variables the age and grade level of the pupil were taken into consideration.

It can be seen from the results that males and females did not demonstrate significant differences in the successful completion of any of the tasks. There was a slight trend in favor of the males, however, on all tasks.

Perhaps the most surprising finding was that the non-preschool attenders performed better on five (5) tasks, namely: length, weight, number, seriation and grouping. The preschool attenders performed slightly better on the classification task. When high and low income families were compared, the high income non-preschoolers performed significantly higher (.05) on the grouping task, and (.10) on seriation and the conservation of weight. It is a surprising finding and yet there are some possible explanations of this. First, it is important to remember that the third graders (Standard 1) who had been preschool attenders would have attended preschool three or four years ago when the programs were just beginning to be developed. There can be little doubt that the programs have improved in the years following. There is still work being done to provide the best possible quality program for all preschool attenders. "The

development of programs of high quality is a priority for those dedicated to deliveruing on the promise of such child care and education projects as the Perry Preschool Project" (Perry Study, 1984, p. 109). This is true for any preschool program and the government of Swaziland has been demonstrating an increasing emphasis on the development of quality programs during the past three or four years especially.

Secondly, there are a number of peripheral elements that relate to the successful operation of a preschool. Ten critical areas for high quality, successful programs that must be examined carefully are listed by the National Association for the Education of Young Children (1983 p. 35 - 46). These ten areas are:

physical environment
health and safety
nutrition and food service
administration
staff qualifications and development
staff - parent interaction
staff - child interaction
child - child interaction
curriculum
evaluation

The areas listed require time for examination and the expenditure of both human and economic resources for the upgrading of each of these important preschool emphases. It is recommended that a full examination of each of these items be completed using expert help from

within the country of Swaziland, and that expert assistance from outside the country be brought in to provide evaluation in areas that cannot be fully explored by the qualified staff on hand. It is also recommended that the preschool curriculum be examined and that tasks such as grouping (which is central to science and mathematics success) be included in the required preschool curriculum.

In an attempt to determine the influence of milieu two comparisons were carried out. Urban and rural comparisons were made. The differences were slight on all tasks, but the rural sample performed slightly better on classification, weight, seriation and grouping. Urban subjects performed somewhat better on conservation of number. A second comparison between high and low income families. Low income pupils outperformed high income pupils on classification, number, seriation and grouping. The idea that might be involved here is that children from lower income families explore their environment more actively. This would be in keeping with the findings that Lwanga-Lukwago (1982) observed in his study in Kenya.

The ages at which pupils successfully completed tasks were found to differ from the Piaget sample in some cases. Subjects in the sample performed well on conservation of number, and seriation, as well as the grouping task. They were late in successfully completing classification tasks and conservation of length and weight. It would seem that the curriculum and the environment may need to provide more practice in the first three tasks listed. Piaget does stress that the cognitive changes that occur are a result of both age and experience.

The study just completed has provided some interesting insights into early childhood education. The findings should be of value to those who are involved in early childhood education in the Kingdom of Swaziland. They should also be of interest to those in other countries of Africa, and to the theorists who are extending the applicability of Piaget's theory.

the Nigerian Psychological Society. Zaria, March, 1976.

Hendrick, Joanne, The Whole Child (2nd ed.). Toronto, Canada: The C.V.Mosby Company, 1980.

Heron, Alastair and Simonsson, Marta, "Weight Conservation in Zambian Children: A Non-Verbal Approach", International Journal of Psychology . Vol. 4, No. 4, 1969, pp. 282 - 292.

Horowitz, Frances Degen (ed.), Review of Child Development Research Chicago, IL: The University of Chicago Press, 1975.

Inhelder, Barbel, and Piaget, Jean, The Early Growth of Logic in the Child . London: Routledge and Kegan Paul Ltd., 1964.

Irvine, Judith T., "Wolof 'Magical Thinking': Culture and Conservation Revisited", Journal of Cross-Cultural Psychology. Vol. 9, No. 3, Sept., 1978, pp. 300 - 311.

Jahoda, Gustav, "Assessment of Abstract Behavior in a Non-Western Culture", Journal of Abnormal and Social Psychology . Vol.53, 1956, pp. 237 - 243.

John, Martha; Dambe, Mbakiso; Polhemus, Sue and John, Floyd, "Children's Thinking in Botswana", Boleswa Educational Research Journal (Otaala and Pandey, eds.). Gaborone, Botswana: Gaborone Printing Works, Vol. 2, No. 1, January, 1983, pp. 3 - 17.

John, Martha et al, "Children's Thinking in Botswana: Piaget Tasks Examined," International Journal of Psychology . Vol. 18, 1983, pp. 229 - 238.

John, Martha Tyler, "Research on Logical Thinking in Primary School Children," SIER Bulletin . The Swaziland Institute for Eductional Research: Number 4, Sept.,1983, pp. 4 - 20.

Kingsley, Phillip, "The Assessment of Conservation Among Zambian Children: A Methodological Study", Psychological Studies. Reports of the Psychology Department, University of Zambia: No. (31), Dec., 1982, pp. 1 - 22.

Kuper, Hilda, An African Aristocracy. (2nd ed.) London: Oxford University Press, 1978.

Light, Richard J. and Margolin, Barry H., "An Analysis of Variance for Categorical Data", JASA . Vol. 66 , 1971, pp. 534 - 544.

Lloyd, Barbara B., "The Intellectual Development of Yoruba Children: A Re-Examination", Journal of Cross-Cultural Psychology. Vol. 2, No. 1, March, 1971, pp. 29- 38.

Lowell, K., The Growth of Mathematical and Scientific Concepts in Children. London: University of London, 1961.

Lwanga-Lukwago, James, "The Development of Territorial Decentration in Children: A Study of Piaget's Spatial Stages in Relation to the School Geography Curriculum in the Republic of Kenya", Doctoral Dissertation: Univ. of Southhampton, 1982.

Macnamara, John, "A Note on Piaget and Number", Child Development. Vol. 46, 1975, pp. 424 - 429.

Macready, Corise and George B., "Conservation of Weight in Self, Others, and Objects", Journal of Experimental Psychology . Vol. 103, No. 2, 1974, pp. 372 - 374.

McNally, D.W., Piaget, Education and Teaching. Hassocks, Sussex: The Harvester Press Limited, 1977.

Minister of Education, Speech, "Preschool Education". July 31, 1980 and 1983.

National Association for the Education of Young Children, "Progress Report on the Center Accreditation Project", Young Children . Vol.39 (1), 1983, pp.35 - 46.

Okonji, Michael O., "Culture and Children's Understanding of Geometry", International Journal of Psychology. Vol.6, No. 2, 1971, pp. 121 - 128.

Ole'ron, Pierre; Piaget, Jean; Inhelder, Barbel and Greco, Paul, "Intelligence", in Experimental Psychology: Its Scope and Methods ,VII (Fraise and Piaget, eds.). London: Routledge and Kegan Paul Limited, 1969.

Otaala, Barnabus, The Development of Operational Thinking in Primary School Children: An Examination of Some Aspects of Piaget's Theory Among the Iteso Children of Uganda. New York: Teachers College Press, 1973.

Owoc, Paul J., "On Culture and Conservation Once Again", International Journal of Psychology. Vol. 8, No. 4, 1973, pp. 250 - 254.

Piaget, Jean, The Child's Conception of Number. London: Routledge and Kegan Paul, Ltd., 1969.

Piaget, Jean, and Inhelder, Barbel, The Psychology of the Child. New York: Basic Books, Inc., 1969.

Price-Williams, D.R., "A Study Concerning Concepts of Conservation" Acta Psychologica, Vol. 18, 1961, pp. 297 - 307.

BIBLIOGRAPHY

Almy, Millie, Davitz, Joel R., and White Mary Alice, Studying School Children in Uganda: Four Reports of Exploratory Research. New York: Teachers College Press, 1970.

Bam, Edna Eva, Basotho Primary School Children and Their Conservation of Mass, Weight, Liquid and Number . Unpublished Master's Thesis: National University of Lesotho, 1982.

Berrueta - Clement, Schweinhart, Barnett, Epstein and Weikart, Changes Lives : The Effects of the Perry Preschool Program on Youths Through Age 19 . Ypsilanti, MI: High/Scope Educational Research Foundation, 1984.

Berry, J.W. and Dasen, P.R., Culture and Cognition: Readings in Cross Cultural Psychology. London, Methuen E. Co. Ltd., 1974.

Bliss, Beverly, and Docherty, Edward M., "Conservation of Mass, Weight, and Volume in Yoruba Adolescents", Child Study Journal . Volume 9, No. 2, 1979, pp.85 - 91.

Dasen, Pierre, Piagetian Psychology: Cross-Cultural Contributions . New York: Gardner Press, Inc., 1977.

Evans, Judith L., Children in Africa : A Review of Psychological Research . New York: Teachers College Press, 1970.

Fahrmeier, Edward D., "The Effects of School Attendance Upon Intellectual Development in Northern Nigeria", Child Development . Vol. 46, 1975, pp. 281 - 285.

Fahrmeier, Edward D., "The Development of Concrete Operations Among the Hausa". Journal of Cross-Cultural Psychology , March, 1978, Vol. 9, No. 2, pp. 23 - 44.

Fafunwa A. Babs, "School Is Other People", The Unesco Courier . Place de Fontenoy, Paris: May, 1978.

Goodman, Jacqueline J., "A Test of Milieu Effects with Some of Piaget's Tasks", Psychological Monographs : General and Applied . Vol. 76, No. 36, 1962, pp. 1 - 22.

Greenfield, P.P., "On Culture and Conservation", in Studies in Cognitive Growth [J.S.Bruner, R.R. Oliver and P.M. Greenfield, (eds.)]. New York: John Wiley, 1966.

Gruber, Howard E. and Voniche, J. Jacques, The Essential Piaget : An Interpretive Reference and Guide . London: Routledge and Kegan Paul Ltd., 1977.

Halligan, M.U., " A Pilot Study of Piaget's Conservation Tasks in Two Villages Near Zaria", Paper presented at

Putsoa, Bongile, "In-Service Training of Primary School Teachers in Swaziland", INSET Africa Project. Bristol University School of Education: August, 1982.

Wadsworth, Barry J., Piaget for the Classroom Teacher. New York: Longman, 1978.

Warren, Neil, Studies in Cross-Cultural Psychology. Vol. 1, New York: Academic Press, 1977.

Werner, Emmy Elisabeth, Cross-Cultural Child Development: A View from the Planet Earth, Monterey, CA: Brooks/ Cole Publishing Company, 1979.

Whittle, P.A., Maths Science Interface Project. Unpublished paper, National University of Lesotho, 1979.

Wober, Mallory, Psychology in Africa. London: International African Institute, 1975.

APPENDIX A

HOME TRAINING

Social Skills

Folk Tales (Tinganekwane):

The grandmother told folk tales; this story telling was done in the evenings and was a special attraction for the little ones. There was always a lesson to learn from each folk tale. This included moral lessons and acceptable social habits.

Traditions:

Many Swazi customs were taught specifically. For example, even as babies Swazi children were taught to always put both hands together to receive anything they were being given. It was and still is considered an impolite gesture to use one hand - especially the left hand - when receiving what is being given. They were also taught to kneel down whenever they addressed an elderly person. This was done as a sign of respect. Other values and traditions such as aspects of sex education, marriage, and raising a family were taught. There was information even for the preschool child in these categories. For example, a little girl was taught to sit properly in order not to expose herself (the Swazi term is sibaya sababe which means father's cattle byre). The implication here was that when the little girl grew up she would get married and the father would receive a good bridal price depending on her virginity. Some evenings the fathers and the boys met at a place near the cattle byre which was for males to gather around (esangweni). There they were educated on the following aspects of life:

Kusoma - dating and proposing love to a girl
Kujuma - courtship
Kuphatsa umfati - how to care for your wife.

All the boys, including the 4 and 5 year olds, went to listen and though the younger ones did not understand everything at once they would eventually grasp the meaning or get the message.

Riddles: (Tiphicaphicwano)

Riddles or oral word puzzles made it possible to test a child's ability to think, make associations and arrive at correct conclusions.

Daily Routine:

Male and female roles determined what activities were given to the children in order to help them cope with their environment. During the working day, the head of the family, father or grandfather, was responsible for teaching the boys. The wealth of any man was measured in terms of the number of cattle he owned. There were also other valuable domestic animals such as goats, sheep and fowl, which were owned by the women. Little boys were taught to be responsible for looking after the calves. Early in the morning the cattle were led to the grazing fields while the little boys minded the calves which remained near the homestead. The calves only joined the cows after the cows had been milked. A boy would be responsible for the herding and for bringing the cattle to the cattle byre. Others would herd the calves. Smaller boys followed the older ones when they herded the livestock. Even the late King Sobhuza II who was born in

1899 did his. By accompanying the herders he learned to distinguish edible and poisonous plants and to know the habits of birds and animals (Kuper, 1978, p.36).

Girls, especially those of preschool age, were taught by the gogo to cook (kupheka); sweep (kutsanyels); collect firewood (kutfota); fetch water (kukha emanti); smear the floor with cow dung (kusindza); and grind corn (kusila). When the girl swept the floor the grannie would praise her and encourage her to do better next time. Girls also went to collect berries and other types of wild fruit. The infants followed the bigger girls and brought what they collected to their grandmother. Other activities for girls included making clay pots and grass ropes as well as weaving sleeping mats.

There were peer group activities where all children played together. Preschool children learned how to play games from the older ones. They played games such as kukhenca, putting small stones into a shallow hole, throwing one up and drawing out some from the hole without dropping the one thrown up. The one who ended up with the most stones won the game. (The activity could be compared somewhat to the game of 'Jacks' played in Euro-Western settings.) The children also played simulation games where the role of father, mother and children were enacted. They learned riddles and said, or recited, the King's praises as a part of the group learning process.

Cognitive Skills

The phenomenon of cognitive development was recognized in earlier times. According to age group there were certain expectations for children in terms of generally accepted behaviour. For example, by the time a child lost his milk teeth he was expected to have a sense of responsibility and his Swazi identity was already inscribed by a small slit cut into the lobe of each ear, symbolizing the hearing of new things and the end of the more carefree years of childhood (Kuper, 1978, p.37). The recognition and implementation of these cultural expectations was a sign of how fast or slow a particular child's thinking was developing. Concepts in the areas of number, classification, weight, and length were acquired through the daily routine of activities. To demonstrate the methods employed in earlier times, the following examples will suffice:

Number Concept:

Boys acquired the concept of number from herding cattle and calves. A boy would have to check all the animals in the evening. When one calf was missing, the question would be, "Where is Mabalengwe's calf?" (Mabalengwe being the name of the cow) This stock taking procedure involved counting, adding, and subtracting. Girls played games such as kukhenca, which involved the counting of stones. When the girls made miniature sleeping mats under the gogo's tutorship, they needed to count the grass straws they used.

Classification:

All Swazi homes reared different kinds of animals such as cattle, goats, sheep, dogs and fowl. Even four or five year old children knew that all these were classified as animals even though they were different from one another. It was from this setting that a child could tell whether there were more animals than goats or more goats than animals.

Weight:

Both boys and girls used clay for making toy cattle and other animals. They also used clay to make clay pots. They gained the concept of mass and weight from their use of clay and through other activities such as fetching water and carrying loads of various types. No scales or exact measurements were involved in this type of weight experimentation, but a general concept of "light" and "heavy" was developed.

Length:

Distances travelled when seeking pastures for livestock and when going to the stream for water required use of terms of measurement. Boys were taught to make rope from the hides of cattle and these were used for making whips and for tying the legs of cattle together to keep them from straying. The aspect of length was part and parcel of this exercise. Sleeping mats were made by the girls and teaching them this skill involved measurement in terms of length and breadth. This was most often done on a comparative basis by comparing one mat to another rather than by the use of a ruler or metric measure.

In summarizing the historical educational program in Swaziland, one could say that much of the education of the children was the responsibility of the family, and was designed to promote the well-being of the individual and the community in practical ways.

APPENDIX B

DEFINITION OF siSWATI TERMS

emabutfo.....Swazi regiments according to age groups

kagogo.....grandmother's residence or hut

gogo.....grandmother

tinganekwane.....folktales

sibaya sababe.....father's cattle byre

tiphicaphicwano.....riddles (oral)

esangweni.....conference area for males only - near cattle byre

kusoma.....to propose love - dating

kujuma.....courtship

kuphatsa umfati.....to care for a wife

kupheka.....to cook

kutsanyela.....to sweep

kutfota.....to gather fire wood

kukha emanti.....to fetch water from the stream

kusindza.....to smear the floor with cow dung - cleaning it

kusila.....to grind corn on a flat rock using a smaller stone

kubumba.....to use clay to produce household pottery

kweluka.....to make rope by twisting grass leaves

kukhenca.....girls' game of throwing up one stone while drawing more stones out of a shallow hole, a counting game

Mabalengwe.....a typical name for a cow (one which has colours like that of a tiger)

vulela.....take the cattle out to the grazing field in the morning

valela.....drive the cattle into the byre in the evening